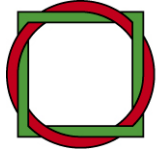


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Stabilizing Regulated Carbon Markets Options and Ideas to Stabilize CER/ERU Prices

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Wuppertal Institute
for Climate, Environment
and Energy

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Stabilizing regulated Carbon Markets

Options and Ideas to stabilize CER/ERU prices

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Summary

The international carbon markets are currently suffering from extremely low carbon prices. The reason for this is a fundamental imbalance of supply and demand for carbon credits. While the supply has ever grown, demand is fixed and limited. With the adoption of a second commitment period of the Kyoto Protocol without large emitters such as Japan, Canada and Russia, this situation has anything but changed.

This Policy Brief aims to sketch the options to stabilize the market prices in the short term and to avoid the complete halt of the market. Options to increase demand as well as options to restrict supply have been looked at. Mid-term and long-term options, by contrast, are not analysed.

These options were analysed regarding their potential to do so along three main criteria: their quantitative impact, their signalling effect for the future of the carbon market and their political and market acceptability. Central pros and cons for every option are summarized in a table below.

Only two options were found to be likely to have significant impact on the market. Increasing the level of ambition would send a strong signal and could restore market participants' faith in the future of the mechanism. Under the current fiscal and economic crisis and given the long debate on increased ambition for example within the EU, this option is, however, highly unlikely to be implemented.

The second option that could send a similarly strong signal would be the use of international

climate finance to purchase excess CERs via the Green Climate Fund or other vehicles. The GCF is supposedly large enough to create credible, additional and long-term demand and thus alter the supply-demand balance. However, this option could conflict with principles of appropriate mitigation and particularly appropriate support that are to be met by the GCF. It would furthermore set the GCF on a route towards project-based mitigation, potentially replicating issues of the CDM regarding environmental integrity, sustainable development and equitable geographical distribution of support, which many seek to avoid in the context of the GCF. Implementing stringent selection criteria and supporting specific projects via the primary market could be an option to overcome these drawbacks. However, this would also limit the GCF's potential to stabilize carbon markets as a whole.

None of the other options discussed bear the potential to single-handedly address the current crisis. They are either too small in scope, too difficult to implement in a timely manner or have undesired side-effects.

If parties want to stop the brain drain from international carbon markets and to safeguard that capacities in developing countries can be maintained, which have been tediously built up, other more target-oriented approaches have to be found. With stringent selection criteria in place and with a focus on projects / programmes that provide a perspective in line with what is desired in a future climate change agreement, the GCF deserves a closer look in this regard.

Summary of options to stabilize carbon markets	
Demand-side options	
1) More ambitious targets	<ul style="list-style-type: none"> + strong signal to carbon markets + additional long-term demand - unlikely to be agreed upon
2) Extended use for compliance	<ul style="list-style-type: none"> - low potential due to lack of ambition
3) Extended use for non-compliance goals	<ul style="list-style-type: none"> + easy to implement voluntarily + target-oriented support of projects is possible - sufficient scale unlikely in the face of budgetary and economic crisis
4) CER use in emerging ETSs outside the Kyoto Protocol	<ul style="list-style-type: none"> + potentially large sources of additional long-term demand + ETS covered sectors form no longer CDM potential - little interest by implementing countries to make use of CERs - only mid- to long-term perspective
5) CER use in voluntary markets	<ul style="list-style-type: none"> + potential for increased use - small volume of voluntary markets is not sufficient to address supply-demand imbalance
6) Introduction of a Fund or use of the GCF	<ul style="list-style-type: none"> + GCF is potentially large enough to create sufficient demand + short-term availability + target-oriented support for specific project types, regions or modalities if strong eligibility criteria are applied - NAMA principles not reflected when CERs are purchased from secondary markets - further market fragmentation if only selected (primary market) CERs are eligible
7) Introduction of a CER reserve bank	<ul style="list-style-type: none"> - no possibility to alter absolute supply-demand balance - little chance to abate price volatility due to speculative nature of CER prices - unclear up-front financing of the bank
8) Introduction of a floor price	<ul style="list-style-type: none"> - unilateral floor prices distort market prices - do not increase but decrease demand for offsets - global floor price would require fundamental makeover of the CDM
Supply-side options	
9) Restriction of eligibility of projects	<ul style="list-style-type: none"> + reduced supply + easy implementation - no clear signal on the future of the mechanism - limiting the mechanisms potential - unlikely to be agreed on
10) Rigorous assessment of projects	<ul style="list-style-type: none"> + improved environmental integrity - no short-term effect since only future projects are affected
11) Discounting of Credits	<ul style="list-style-type: none"> + significantly reduced supply or increased demand + improved environmental integrity + implementation possible unilaterally on the demand side - implementation on the supply side requires fundamental revision of the CDM modalities and procedures - requires additional ambition that is unlikely in the face of the fiscal crisis
12) Application of ambitious baselines	<ul style="list-style-type: none"> + reduced supply + improved environmental integrity - implementation would require overhaul of CDM and its methodologies - would apply for future CER supply only - only long-term effects
13) Limiting projects to one crediting period	<ul style="list-style-type: none"> + strong impact on CER supply - difficult to implement politically - strong resistance from project developers - no signal for long-term perspective
14) Temporary halt of issuance or credits	<ul style="list-style-type: none"> - could destroy market participants faith in the future of the market

1 Introduction

During COP18 in Doha the outcome of the high-level CDM Policy Dialogue was extensively discussed. In the last minute a recommendation had been inserted into the Policy Dialogue's report *"to investigate the establishment of a new fund and/or enable existing or emerging funds to purchase and to cancel part of the current overhang of CERs. National governments could be invited to meet part of their commitments to international carbon [sic!] finance through contributions to this fund."*¹

This initiative is originated in fears over the collapse of the regulated carbon markets. The markets for CERs and ERUs have faced extremely low prices recently because of the imbalance of increasing supply of and ever diminishing demand for CERs and ERUs. CDC Climat estimates mid-term demand for CERs to be between 1.6 and 1.9 billion tonnes CO₂e. At the same they forecast the CDM to supply the required CERs as soon as 2014. They therefore conclude that prices could fall to nil as soon as 2014.²

Given the certainty about supply and the resulting lack of scarcity that can be deducted from the CDM pipeline, it is obvious that current CER prices do not reflect abatement costs but are rather based on speculative expectations of future demand.

This Policy Brief sketches the options to stabilize market prices in the short term. The analysis is guided by three main criteria: the quantitative impact on the supply-demand balance, to what extent the measures sends a signal for the long-term development of the market and both political and market acceptability.

The paper is structured according to the market side that the discussed measures apply to. Measures that increase or widen the sources of demand are summarized in chapter 2. Options include more ambitious emission reduction targets by Kyoto parties, extended use of CERs for purposes other than compliance and beyond the borders of the Kyoto Protocol, the introduction of a fund to purchase CERs, a carbon market reserve bank and carbon floor prices.

Chapter 3 summarizes options to restrict supply. These measures are often deemed to be less constructive than demand-side options as they limit the scope of the CDM and thus limit its potential.³ However, supply-side measures are already being implemented widely. For example, the EU-ETS has ruled out CERs from specific project types and will only allow credits from projects registered after 2012 if these are located in least developed countries. Although these measures are implemented on the demand side, they affect the supply of CERs and are hence discussed in this chapter.

Alongside restrictions on the origin of credits and on project types, the date of issuance or project registration, a temporary halt of issuance of credits, a more rigorous assessment of projects, discounting of credits on both supply and demand-side and the application of ambitious crediting baselines below business-as-usual are briefly discussed.

Chapter 4 concludes with recommendations on which options have the potential to stabilize carbon markets especially in the short term.

¹CDM-Policy Dialogue – Report (2012), p. 26.

²Bellassen, Stephan and Leguet (2012).

³CDMPolicy Dialogue – Report (2012), p. 25.

2 Demand-Side Options

The collapse of international carbon markets is the result of lack of demand on the international level, leading to a massive oversupply of CERs. To address this imbalance two possible routes are available. Restricting supply and thereby shrinking the potential and scope of the carbon market or increasing demand and thus scaling up the mechanism. The latter of these two routes is preferred by many as the CDM and carbon markets in general have been perceived as a valuable, functioning mechanism and as a tool that has still potential for development.

In this section we focus on options that increase demand. To have a significant effect, any proposed measure should signal the continuation of the mechanisms and markets. Market prices are currently only of speculative nature. They do not represent actual mitigation costs but merely reflect market participants' expectations about future climate legislation, that is, future demand for carbon credits.

The second challenge is the structural imbalance of supply and demand. Some scholars argue that the CDM in its current form will always have an oversupply problem because the technical potential for generating credits will always be much greater than what industrialised countries can absorb.⁴ Even if this is not the case, one-shot interventions are not likely to have a significant effect on markets, even if they absorb a majority of the current oversupply. As long as they do not provide a long-term perspective for continuous demand that can take up the large supply potential, it is unlikely that measures have a significant effect on carbon markets.

2.1 More ambitious targets

The most obvious measure to stabilize international carbon markets would be an increase of the ambition of mitigation targets. It is, however, not very probable that countries can agree on raising ambition in the short term. The second commitment period of the Kyoto Protocol has only been settled recently. With major emitters such as Japan, Russia and Canada not committing to binding emission reduction targets, it became obvious that political support for the KP is diminishing.

One gleam of hope may remain: The remaining Annex B countries agreed to review their commitments with regards to the level of ambition by 2014 to ensure that targets are in line with stabilizing global warming below 2°C.⁵ In December 2014 the 5th Assessment Report of the International Panel on Climate Change (IPCC) is due to be published. Earlier editions of this report have consistently raised public concerns, attracted wide media coverage, increased pressure on political leaders and thus created a window of opportunity for increased ambition.

In the past, raising of ambition has proven difficult. The EU, as the largest emitter still committing to binding emission reductions and thus as the largest potential source of demand for offsets, has struggled to raise its emission reduction goal. Already in 2008 the EU committed itself to reduce emissions by 20 per cent till 2020 and to raise its level of ambition to 30 per cent in case other countries commit to comparable efforts. Five years later member countries are still discussing to move to the more strin-

⁴ Korthuis (2013).

⁵ UNFCCC (2012): Decision 1/CMP8.

gent target even though emissions have already drastically fallen and the EU is close to meeting its goal much earlier than anticipated.⁶

Climate policy is even more controversial in Australia, the other remaining large emitter in the Kyoto Protocol. General elections will be held this year and the current opposition leader Abbot has made a “pledge in blood” to repeal the carbon pricing legislation should he become Prime Minister.⁷

An increased level of ambition may not necessarily stabilize compliance markets. Even if the countries that have committed to binding emission reductions under the Kyoto Protocol’s second commitment period increase the level of ambition, it is unclear to what extent this increased ambition would be offset with the use of CERs or ERUs. However, even if the increased ambition does not translate into increased demand for offsets, it should have a positive effect on carbon markets. An increase of the level of ambition on the international level through more stringent commitments could support the private sectors’ belief in the continuity of strong mitigation efforts. The private sector might thus regain trust in carbon markets and speculative prices could increase, based on buyers’ expectations of future demand. This effect will, however, occur only if other conditions such as the institutional continuity of the CDM are met and a perspective for the CDM beyond 2020 remains open.

2.2 Promoting extended Use of CERs/ERUs for compliance

Another possibility to increase demand for offsets would be to allow for a larger part of existing emission reduction obligations to be

met by the use of offsets. In the Marrakech Accords parties decided to allow the use of offsetting “supplemental” to domestic emission reductions. Many interpret this term as follows: The use of offsets must not exceed 50 per cent of the overall emission reductions. However, a number of countries do not make full use of this quota and restrict the use of offsets more stringently. In the EU-ETS, for example, the amount of offsets that can be used is fixed. It is estimated at roughly 1.65 billion tonnes between 2008 and 2020, not making full use of the 50% quota.⁸ If countries increased this offsetting quota, demand for CERs and ERUs would increase and market prices could stabilize.

The European Environment Agency⁹ estimates that the EU is going to overachieve its emission reduction obligation in the non-ETS sectors by 1% to 8% of 2005 emissions, subject to if and which additional mitigation measures are implemented. Only 6 countries (Luxembourg, Ireland, Malta, Belgium, Greece) are projected to fall short of their 2020 targets. This number could grow to 15 countries,¹⁰ if additional mitigation measures currently being planned are not implemented. Consequently, there is only very limited space to increase the usage of offsetting for compliance in the European non-ETS sectors.

Not only the international carbon markets struggle from large oversupply. Also the EU-ETS, the single largest source of demand for offsets, struggles. Prices have soared in recent years. In 2007, when the national allocation plans (NAPs) were established, policy makers based their decisions on expectations of future economic growth that fundamentally proved wrong with the beginning of the financial and resulting economic crisis in Europe. In conse-

⁶ European Commission (2012).

⁷ The Australian (2011).

⁸ Bellassen, Stephan and Leguet (2012).

⁹ EEA (2012).

¹⁰ Countries include Denmark, Austria, Finland, Estonia, Latvia, Italy, France and Slovenia.

quence, numerous companies, regulated under the EU-ETS, possess many more emission allowances than they actually need, even if they refrain from using offsets for compliance.¹¹ This oversupply poses a threat to the functioning of the EU-ETS even disregarding the use of offsets. Within the European Union different measures are being discussed to stabilize the EU-ETS. Under these circumstances it is hardly plausible that the EU would increase the use of offsets under the EU-ETS since it would further aggravate the oversupply of units in the system – at least not within the current target.

Australia recently even decided to reduce the scope for using CERs. Entities covered by the Australian ETS will be allowed to cover 50% of their compliance obligations through international units from 2015. Initially, only Kyoto units were supposed to be eligible and the expectation was that Australia would become a substantial source of demand, up to nearly 100 Mt annually by 2020. However, in 2012, Australia decided to also accept EUAs as an interim step towards full linking of the two systems. In this context, Australia announced that it would limit use of Kyoto units to 12.5% of entities' compliance obligations, which effectively reserves the lion's share of the international units quota for EU allowances.¹²

2.3 Promoting Use of CERs/ERUs for non-compliance goals of Kyoto-Parties

Apart from increased emission reduction obligations, Kyoto parties could voluntarily buy and cancel CERs or ERUs additional to credits needed to achieve compliance. Countries could issue sovereign purchase programmes to do so.

An advantage for interested countries could be increased flexibility with regards to the 'no-lose' character of additional voluntary pledges. Furthermore, in the EU context it could be the last resort for countries that are willing to show increased effort to bypass blocked EU internal negotiations on increased ambition.

Additional beyond-compliance use of CERs by Kyoto parties could potentially ease the massive oversupply of CERs. However, it would probably only have a moderate effect. In the face of the budget crisis of numerous European countries it is very unlikely that sufficient funding is available to effectively restore scarcity of offsets. Currently, excess CERs are estimated to amount to roughly 1 billion.¹³ Since this measure does not address the structural imbalance between supply and demand, it is unlikely that carbon markets would significantly adjust their expectations regarding future carbon prices and the continuity of the market itself. A profound impact on carbon prices is therefore unlikely.

By concentrating on the primary market and investing in selected CDM projects, voluntary sovereign purchase programs could, however, help to secure the existence of the mechanism and the advancement of its methodologies. One initiative that has opted for that route is the World Bank's Carbon Initiative for Development (CI-Dev). In February 2012 the World Bank proposed a new Initiative which *"aims at helping low-income countries create sustainable access to financing for low-carbon investments through carbon markets."*¹⁴ It will focus on supporting energy access programs in least developed countries. The initiative is built on the ample experience the World Bank has in this field.

¹¹ Sandbag (2013).

¹² see Kachi et al. (2012), p 28.

¹³ Seppänen et al. (2013), p. 43.

¹⁴ The World Bank (2012), p. 3.

The initiative comprises two components: A Readiness Fund supports capacity building and advocacy work in least developed countries for the development of standardized baselines, new methodologies and improved energy access programs. The Financing Fund will provide performance-based payments to energy access programs by purchasing CERs. The British government, which has supported the initiative from its beginnings, is planning to retire CERs obtained through the program. Other CERs may be sold on the secondary market.

Ci-Dev does, however, explicitly not see itself as a means to stabilize carbon markets but rather as an innovative tool to lend performance-based support to energy access programs to aid development in least developed countries.¹⁵

2.4 Extend Use of CERs/ERUs beyond Kyoto-Parties

So far, only countries that have committed to binding emission reduction obligations inscribed in Annex B of the Kyoto Protocol have been allowed to use CERs. In the past a number of industrialized countries have tried to open up this restriction to allow for a wider use of CERs. Developing countries have countered these attempts in the hope to incentivize broader participation in the Kyoto Protocol. However, with the decision of the second commitment period of the Kyoto Protocol and the non-participation of Russia, New Zealand, Japan and Canada, this bargaining chip has been rendered essentially useless. It is therefore within the realm of possibility that the opposing countries abandon their position and allow for a wider use of the CDM.

The CDM Executive Board has in fact already provided an institutional framework for doing so. Whereas previously CERs could only be cancelled in the registry of an Annex B Kyoto Party, the Board decided in 2012 that project participants may request the cancellation of CERs in the CDM registry. Therefore, now anybody may buy CERs and have them cancelled. This decision was strongly supported by the developing country members of the Board.

2.4.1 Use in ETSs outside Kyoto

Around the world emissions trading schemes are being proposed and implemented. Probably the most advanced examples for such developments are the newly started Californian ETS under the Global Warming Solutions Act (AB32) and the South Korean ETS that is scheduled to start in 2015. However, while both initiatives are envisaging the use of offsets, none of them will likely allow for the use of CERs in the near future.

The Californian ETS is estimated to be worth some 50 billion USD per year. Hence, it will be the second largest ETS in the world and could accordingly create substantial demand for offsets. Californian entities will be able to cover up to 8% of their compliance obligation through offsets. The 8% limit cumulatively translates to about 200 million tonnes by 2020 but international offsets are currently not eligible.¹⁶ After initially considering limited eligibility of CERs, the state's regulatory agency in charge of the ETS, the California Air Resources Board (CARB), in the end decided not to allow its use for compliance, inter alia due to concerns about the CDM's environmental integrity.¹⁷

In South Korea, it is likely that priority will be put on domestic emission reductions and that

¹⁵ personal communication with Klaus Oppermann, Team Leader Policy and Methodology Team at World Bank's Carbon Finance Unit.

¹⁶ Point Carbon (2012b).

¹⁷ see Kachi et al. (2012), p 28.

international offsets will hence be completely excluded till 2020.¹⁸

The situation in China is a little different. The development of a national ETS in China could have a significant impact on CER supplies. Even if international offsets are not allowed under the Chinese ETS, covered sectors could no longer be the object of CDM projects, unless double counting is not ruled out.

China plans to allow Chinese CERs (CCERs) for compliance in its proposed national ETS. New CDM-type projects and CDM projects that have not been issued CERs so far are deemed to be eligible. The Chinese national ETS could thus significantly cut CER supply, if a major share of Chinese CDM potential is covered by an ETS and the remaining potential is absorbed as CCERs by the domestic ETS.¹⁹

Although pilot ETSs in China are due to start working already in 2013, the Chinese government has apparently revisited the schedule for implementing a national ETS. The 12th five-year-plan initially targeted the ETS to be implemented in 2015. This goal was, however, reinterpreted. The ETS is now to be developed from 2015 and to be up and working sometime around 2020.²⁰

2.4.2 Extended Use in the voluntary carbon markets

Voluntary carbon markets are a potential source of demand. Companies can purchase CERs or ERUs to offset their emissions and voluntarily cancel these credits. The decision of the Board to allow cancellation of CERs in the CDM registry noted above was taken explicitly to promote use of the CDM in the voluntary market.

In 2011, the volume of voluntary carbon markets was roughly one third of the volume of the

primary CDM market. Although CERs are being used in the voluntary carbon market, their market share is negligible. CERs and ERUs make up for only 0.3 per cent of voluntary carbon markets.²¹

There certainly is a potential to increase this share. A promotion of CERs for use in voluntary markets could thus increase overall demand for CDM/JI offsets. However, since the voluntary market itself is still relatively small compared to the compliance markets, the potential is probably somewhat limited.

2.5 Introduction of a Fund or use of an existing Fund to purchase CERs

There exist numerous different funds that have ample experience in purchasing CERs. Some have been established to support particular types of projects or projects in a specific region. Others have been entitled by individual countries to purchase CERs to be cancelled for compliance. Last but not least, multilateral funds such as the Green Climate Fund could spend some of their means on CERs. All existing funds have in common that they do not directly affect the demand-supply balance. Only if the acquired CERs are retired, a fund increases absolute demand.

Buying up excess CER supply could temporarily increase prices, but a one-shot intervention is not likely to stabilize markets. Rising prices would lead to rising investments in new CDM projects that would again restore the current oversupply. A lasting effect could only be achieved by creating additional long-term demand. Nevertheless, the UNFCCC has com-

¹⁸ see Kachi et al. (2012), p. 32.

¹⁹ see Seppänen et al. (2013).

²⁰ Parnell (2013).

²¹ Peters-Stanley(2012), p. vii.

missioned research to explore the options of a CDM Rescue Fund.²²

To have a significant effect, such a fund would require substantial financial resources. The use of international climate finance as pledged by developed countries in the Copenhagen Accord has been proposed accordingly.

Of course, developed countries could directly buy up CERs and count their expenditures towards their climate finance commitments. Alternatively, the Green Climate Fund (GCF) could be mandated to do this. The GCF will supposedly be financially potent enough to create credible long-term demand. The advantage of using the GCF over direct purchases by developed countries would be that the GCF allows for central supervision and the introduction of consistent and homogenous selection criteria.

The final report of the High-Level Panel on the CDM Policy Dialogue therefore recommends *“enabling the finance flowing into existing or emerging funds, such as the Green Climate Fund, to be used for such purposes [purchasing and cancelling CERs]”*.²³

While the fund is still being made operational, it also suffers from donors' hesitation to provide the necessary funding. This hesitation is often attributed to a lack of transparent rules for the distribution of the money and particularly to lack of sound measurement, verification and reporting procedures to enable surveillance of supported capacities with regards to performance and results. Research commissioned by the CDM Policy Dialogue therefore suggested to make use of the ample experience of the CDM und to use the CDM institutions to act as a service provider to the GCF. The GCF could thereby leapfrog learning processes, shortcut

the development of procedures and increase donors' trust in the short-term.

Using CDM infrastructure for the GCF is, however, not the same as directly buying CERs. While the former might be a promising shortcut in getting the GCF's mitigation window up and running, the latter conflicts with important principles of UNFCCC process and the idea of the GCF itself: The GCF was launched with the ambition to improve certainty to enterprises. One means specifically discussed would be to install a fixed price of carbon and as a result provide a strong investment incentive. Simply buying excess CERs from the secondary market would thwart that ambition. Even if it is technically possible to ensure a minimum price by buying up CERs, this is hardly plausible in the reality of climate politics.

Furthermore, it would only consolidate the imbalance between emerging economies and least developed countries that has been evident in the CDM so far. Financial flows would not be directed to those regions that need financial support most but to countries that already profit extensively from the CDM. The GCF should lend support to developing countries implementing their nationally appropriate mitigation actions (NAMAs). By simply buying up CERs any reference to the appropriateness of the mitigation action in the respective national context and the appropriateness of the financial support is lost.

Also, due to the criticism regarding to environmental integrity that the CDM faces, numerous countries including the EU see the future of broad mitigation mechanisms in sectoral instead of project-based mechanisms. Purchasing excess CERs on a large scale would as a matter of fact set the GCF on a track towards project-based mechanisms that could prove difficult to be reversed.

A possible way forward would be not to buy CERs from secondary markets but instead revert to primary market CERs. With adequate guide-

²² Point Carbon (2013)

²³ CDM Policy Dialogue – Report (2012), p. 25.

lines, the GCF could focus on projects in certain regions, e.g. LDCs, or demand credits only from projects or Programmes of Activities with innovative character that are integrated in comprehensive mitigation plans of the host countries. In doing so, some of the above mentioned criticism could be accommodated and institutions in developing countries could be supported to survive the immediate crisis of carbon markets. At the same time it would fragment the market and neglect all projects and countries that do not fall under the respective guidelines. It can therefore not be considered to be suitable to stabilize carbon markets on a large scale.

2.6 Introduction of a CER/ERU reserve bank

The final report of the High-Level Panel on the CDM Policy Dialogue recommends “to consider the establishment of an institution to serve as a de facto reserve bank for CERs, charged with stabilizing the market.”²⁴

A monetary reserve bank typically manages a currency by adjusting interest rates and money supply based on a nation’s economic development. To apply this model to international carbon markets is, however, not straightforward. A “reserve bank” could not directly manipulate money supply, i.e. CER supply, because registration of projects and issuance of CERs is done by the CDM Executive Board. Such an institution could therefore only act as a buyer or seller of CERs on the secondary market. A reserve of CERs that could be used to manipulate carbon prices later on would have to be built up in the first place. Unlike a national reserve bank, the carbon market reserve would need upfront financing to build up this reserve. Considering the international nature of the

reserve bank, the sources of this funding are unclear.

The final report of the High-Level Panel on the CDM Policy Dialogue states that such an institution should not be a fund but rather aim to make profit. These profits could then be used to expand the institution or to support other mitigation activities.²⁵ Given the international context and the limited possibilities to manipulate the carbon market, the role of a carbon market reserve bank would not much differ from conventional banks that are already involved in the carbon market.

Last but not least, a carbon market reserve bank would not alter the structural imbalance between supply and demand. It is highly unlikely that a reserve bank would be mandated to be able to retire CERs as it would interfere with political sovereignty of the countries involved even if they are duly represented in the banks oversight bodies. Due to the fact that current CER prices are of speculative nature rather than a result of scarce supply the bank’s possibilities to abate price volatility in the short-term are limited.

2.7 Introduction of a (unilateral) floor price

Theoretically a floor price for carbon credits could yield a long-term incentive for investment and thus revitalize the supply-side to the carbon market. Yet, unless the demand-side is being adjusted, this stabilization could only be achieved at the expense of freely fluctuating market prices.

Floor prices could be introduced globally or unilaterally. Furthermore, it is possible to introduce them on the demand-side or on the supply-side. In the following, two different

²⁴ CDM Policy Dialogue – Report (2012), p. 26.

²⁵ CDM Policy Dialogue – Report (2012), p. 25f.

approaches are being presented and their influence on global carbon markets is discussed.

The UK has introduced a carbon floor price. This floor price will take effect as of April 2013. The aim is to support investments in climate friendly technologies and to create reliable and predictable revenues for the British budget. The floor price is implemented via the existing Climate Change Levy. In the past, companies under the ETS could claim back a rebate of the CCL. This rebate will now be decreased to ensure a carbon price of 15.70£ in 2013, 30£ in 2020 and 70£ in 2030.

If implemented globally, this type of incentive could revive demand in carbon offsets. Implemented unilaterally, the floor price will incentivize more emission reductions than the EUA price would do. The demand for CERs is therefore decreased in the country that implements a floor price. Hence critics say that this unilateral approach will only increase pressure on EUA prices and in the consequence of CERs prices. With sinking prices auctioning revenues of all other states will decrease.²⁶ As a unilateral measure, it is not suited to support international carbon markets.

Early on, China imposed an informal minimum price on CERs from CDM projects in China that are still to be registered. Projects that expressed their intention to sell CERs for less than 8€ were simply not approved. In the face of plummeting carbon prices, China lowered its floor price to 7€ in January 2012.²⁷

According to Bloomberg (2012) it is getting harder and harder to enforce this floor price. Despite China being by far the largest supplier of CERs, the effect of its carbon floor price is not reflected in global CER prices. The Chinese

unofficial carbon floor price has thus proven ineffective in stabilizing market prices.

²⁶ Sandbag (2012).

²⁷ Point Carbon (2012a).

3 Supply-side Options

Next to measures that aim to increase demand for CERs it would be possible to restrict supply. Such measures would reduce the issuance of CERs and thus help to achieve a more balanced relationship between supply and demand.

In its final report the High-Level Panel on the CDM Policy Dialogue emphasizes the effectiveness of the CDM in achieving cost efficient emission reductions and helping developed countries achieving compliance. They estimate realized savings in this regard to be at least 3.6 billion USD. Consequently, the High-Level Panel insists that *“this should be taken into consideration when assessing what measures to adopt, and particularly whether to impose measures that would restrict the operation of the CDM.”*²⁸

However, in the face of immediate crisis, a (temporary) restriction of supply could be the only way to restore the balance of supply and demand and to safeguard the functioning of the mechanism until more long-term demand-side measures take effect.

There are two possible routes to introduce supply side measures: They could be implemented on the international level, i. e. by the CDM EB or another UNFCCC body or they could be implemented unilaterally by credit buyers. The last option is already in use. The EU has restricted the use of CERs from certain types of projects and has limited the eligibility from projects registered after 2012 to projects in least developed countries.

In the following a number of supply measures are briefly sketched.

3.1 Restricted eligibility

The role of the CDM in a future climate change regime will not be the same as in the Kyoto Protocol. Particularly if more extensive market mechanisms are being implemented, it is likely that the role of the CDM will shift away from the mainstream towards niches of mitigation projects that are not suitable for the envisaged new market mechanisms.

Restricting the CDM supply to such niches could theoretically safeguard the existence of the CDM system by levelling out supply and demand and at the same time prepare the CDM for its new role in a future climate change regime. Obviously, this approach risks taking the second step before the first one since it aims to adapt the current regime to one that has not yet been constructed.

However, it bears noting that for example Korthuis (2013) argues that the CDM in its current form was inexorably bound to run into an oversupply situation. The argument is that the potential for reducing emissions in developing countries is orders of magnitude higher than what industrialised countries could ever absorb, even with more stringent targets. Restricting the possible supply substantially is therefore in his view the only way in which the CDM could be made functional for the long term.

3.1.1 Restriction by type of project

The current CDM has repeatedly been criticized for being not environmentally integer. Some specific project types, namely industrial gas projects, large hydro-power projects and large conventional power generation projects, have been at the core of this critique. These types of

²⁸ CDM-Policy Dialogue – Report (2012), p. 25.

projects are often deemed to be not additional and at the same time generate a major share of all CERs.

The EU has, therefore, prohibited the use of CERs from specific industrial gas projects in the third trading period of the EU-ETS.²⁹ An exclusion of large power projects is being proposed by some experts.³⁰

By the use of a negative list certain types of projects could be ruled out in the future. This would result in reduced future supply but would not affect current supply and thus have no immediate effect on the supply-demand balance.

An immediate ruling out of all existing projects, instead, would have a significant effect on current supply. The drawback of such measure would certainly be a loss of faith in the mechanism itself.

3.1.2 Restriction by region

In a move to support sustainable development of least developed countries, the EU has decided that CERs from projects registered after 2012 will only be eligible as offsets in the EU-ETS if they are hosted in least developed countries. Since the EU is by far the biggest source of demand for CERs in the second commitment period of the Kyoto Protocol, this measure will very likely have a strong impact on future supply.

Again, a retroactive exclusion from credits e.g. from emerging economies such as China and India would have an immediate effect but hamper market participants' faith in the CDM system.

3.1.3 Restriction by date of issuance/project registration

Theoretically, it would be possible to restrict the use to CERs issued or CERs from projects registered after a certain date. With regards to effect on the demand-supply imbalance the same holds as to both approaches of restricted eligibility described above.

Additional to that, it would be difficult to argue why some projects would be eligible and other projects that perform as well or even better but have been implemented earlier should fall out of the scheme. Restricting the eligibility by date or issuance or project registration would thus introduce a moment of arbitrariness that would certainly shatter project participants' faith in the mechanism.

3.2 More rigorous assessment of projects

The number of projects and hence the number of CERs can also be reduced by applying more rigorous assessment standards in the approval process of a CDM project. More conservative baselines would reduce the number of CERs issued to a project. By more sound additionality assessment, likely, a fair share of projects would be excluded and at the same time environmental integrity of the mechanism would be improved.

However, this approach has two downsides. It would further increase transaction costs and the risk of failed investments in case a proposed activity is dismissed. This is likely to hit regions hardest that are already underrepresented in the CDM to date. Current measures to improve the geographical distribution of CDM projects focus on decreasing transaction costs for individual CDM projects (e. g. promotion of PoAs) and reduced complexity of the project cycle (e. g. promotion of standardized baselines). A

²⁹ European Commission (2011).

³⁰ Carbon Mechanisms Review 1/2013.

move to a more rigorous assessment of projects to decrease supply would foil these efforts.

The second downside is that the assessment of projects would only affect the project pipeline and not projects that are already registered. This measure, therefore, cannot take an immediate effect on supply but would instead reduce only future rather than current supply, since existing projects already oversupply current demand.

Another approach could be more rigorous MRV of registered projects. The cost for this measure could be more easily calculated by project developers. Furthermore, the measure would also affect projects already producing CERs. However, the effect is estimated to be too low to have a significant impact.

3.3 Discounting of Credits

Different approaches to expand the CDM's scope beyond a pure offsetting mechanism have been discussed in recent years. One option particularly looked at is discounting of offsets. To date for every reduced tonne of CO₂e one CER is being issued which entitles its owner to emit one tonne of CO₂e. By adding a discount factor either a project could receive less than one CER per tonne CO₂e abated or implemented on the demand-side every installation or country with emission reduction obligation could be obliged to surrender more than one CER per tonne CO₂e emitted.

Potentially, the introduction of a discount factor could fundamentally alter the supply-demand balance on the carbon market. A discount factor of 2 implemented on the supply side would effectively cut CER supply in half. The introduction of such a discount would, however, affect project developers since they would receive only half the CERs to sell. On the other hand, the effect of increasing prices could abate this effect to some extent.

However, implementing discounting factors on the supply side could prove difficult. It would require a fundamental overhaul of the CDM regulations including the Marrakech Accords. It is not plausible that this can be achieved timely enough to address the acute crisis of international carbon markets. Furthermore, implemented on the supply side, a discount factor would very likely only affect future projects and thus future supply. Current supply would in this case not be addressed.

More feasible could be the implementation of discount factors on the demand side. Countries could commit themselves (unilaterally) to surrender e. g. two CERs per tonne CO₂e emitted and oblige regulated entities, e. g. EU-ETS installations, to do so. This would effectively double CER demand and could fundamentally alter the balance of supply and demand.

However, the implementation of a discounting factor on the demand side would as a matter of fact increase the level of ambition as described above, although without additional domestic mitigation commitments. For the introduction of discount factors on the demand side, therefore, holds the same argumentation as for increased ambition as discussed above.

3.4 Limiting supply by applying ambitious baselines

Currently, each CDM project has to develop a business as usual scenario that actual project emissions are subtracted from to calculate emission reductions. A way to generate atmospheric benefits atop of offsets would be to depart from business as usual as crediting baseline and instead use a more ambitious scenario. Determining credits by using a scenario that is a given percentage below the business as usual scenario, each project would receive less CERs and hence CER supply would decrease.

Again, project developers would dispose of less CERs but could likely sell them at higher prices. Unlike the introduction of a discount factor, such an approach could eliminate part of the CDM potential. All projects that generate additional emission reductions only slightly above BAU but not enough to fall under the more ambitious crediting baseline would fall off the CDM pipeline.

The introduction of ambitious crediting baselines would require a substantial overhaul of the CDM system including its methodologies. Furthermore, such a revision would very likely apply only to future projects and thus only limit future CER supply. Although the measure could improve the mechanism's environmental integrity and could be a meaningful evolution of the CDM system, it is not considered to be suitable to address the current supply-demand crisis.

3.5 Limiting CDM projects to only one crediting period.

The CDM foresees that projects can request the renewal of crediting period once the project has reached the end of its first crediting period. A possible way to dramatically cut CER supply would be to prohibit the renewal of the crediting period. The time for such a measure is right as numerous projects of the early phase of the CDM are now approaching the end of their first crediting period.

However, this would mean a retroactive change of the rules of the CDM as laid down in the Marrakech Accords. On the one hand this would require a cumbersome political process to be decided. On the other hand it would certainly cause strong resistance from the project developers community as it would rob the regulative basis they based their investment on.

The measure, though potent enough to significantly alter the supply-demand imbalance,

would send a devastating signal to the market hampering future investment in CDM projects.

3.6 Temporary halt of issuance of credits

Certainly the most drastic approach to limiting supply of offsets would be to temporarily halt the issuance of credits. This measure would certainly have an immediate and drastic effect on CER prices. However, it is not clear in what direction. On the one hand CERs would immediately become a scarce good and this should lead to rising prices.

On the other hand current CER prices are to a large degree speculative prices that are not based on actual costs but rather on buyers' expectations of future demand, supply and relevance of the mechanism and its credits. A halt of issuance of CERs would be a radical intervention in the market. It would severely hamper investors' faith in the mechanism itself.

Market actors could perceive such extreme measure as a lead towards non-continuation of the CDM and the offsetting concept on the international level. Consequently, if current prices are purely speculative and if the market loses faith in the future of the market, prices would immediately collapse.

On the other hand, with CER prices falling to the bottom some argue that the market has already collapsed. As part of a policy package together with measures that signal a continuation of the CDM, a clearly communicated and temporally limited halt of issuance of credits could provide first aid to the markets.

However, as a single-handed measure a temporary halt of issuance of credits is not considered suitable to stabilize international carbon markets.

4 Conclusions

On the supply and demand side 14 different options to stabilize market prices were identified in this paper. These options were analysed regarding their potential to do so along three main criteria: their quantitative impact, their signalling effect for the future of the carbon market and their political and market acceptability. Central pros and cons for every option are summarized in a table below.

Only two of the presented options are potent enough to single-handedly revitalize international carbon markets: a strong boost of the level of ambition of emission reduction targets or the introduction of a sufficiently large fund such as the Green Climate Fund (GCF) to create additional and continuous demand. Both measures would send a signal to carbon markets that would very likely be bold enough to restore the market's faith in the future of the CDM and would thus bring CER prices back to a more healthy level.

Both options face, however, severe drawbacks. An international agreement with increased level of ambition seems unlikely. Furthermore, with the adoption of the second commitment period of the Kyoto Protocol in Doha 2012, a window of opportunity for increased ambition has been closed. The Kyoto Protocol was amended with a paragraph that requests a review process to evaluate the adequacy of the emission reduction obligations by 2014, but this process will not start soon enough to provide the short-term signal that is needed.

The second option, the use of financial flows of the GCF to purchase excess CERs is probably easier to implement, but would have profound consequences for the future of the UNFCCC process. The GCF is meant to channel funding from developed countries to support adapta-

tion and mitigation measures in developing countries. Installing a fixed price for carbon emission reductions is under discussion as one means to provide a stable incentive. However, a carbon floor price managed by the GCF is hardly plausible under current climate policy realities, given the amounts of funding that would be required.

In addition, by purchasing excess CERs from the secondary market financial flows would be directed mainly to large industrial gas and power projects in emerging economies such as China, India and Brazil as these host the vast majority of CDM projects. Also, if the GCF simply buys secondary market CERs, an evaluation of the needs of support and the appropriateness of efforts is no longer possible. The GCF would therefore revert from the principle of appropriateness of support in doing so.

While certainly many important lessons can be learned from the CDM, especially regarding its approach towards measurement, reporting and verifying of emission reductions, a simple adoption of the CDM by the GCF would carry over and expand many of the mechanism's problems such as uneven geographical distribution and repeatedly doubted environmental integrity.

By implementing robust selection criteria in the GCF and reverting to primary carbon markets the above mentioned downsides can be mitigated or even overcome. However, focusing on certain regions (e.g. LDCs and SIDS) and/or on project types / modalities (PoAs and projects integrated into national NAMA strategies) which provide a perspective that is in line with what is desired for a future climate change agreement, the GCF would lose much of its

potential to stabilize the carbon market as a whole.

Yet if it is not the goal to stabilize the current markets as a whole but instead to provide a bridge for institutions and project developers in specific regions to overcome the current troubles, the utilisation of the GCF deserves a closer look.

Other options, including the extended use of CERs in voluntary markets, ETSs outside the Kyoto Protocol for voluntary emission reductions beyond compliance goals and restrictions on the supply-side of the international carbon markets have the potential to move international carbon markets in the right direction, but are too small in scale or the effect would take place too far in the future to restore the balance of supply and demand single-handedly in the short term. To what extent a package of combined smaller measures can restore faith in the CDM is beyond the scope of this paper. A quantitative analysis of each individual measure's impact on supply and demand respectively could provide an indication.

Applying more ambitious crediting baselines and/or introducing a discount factor both could mean a significant improvement of the CDM. They would move the CDM beyond a pure offsetting mechanism and thus improve its environmental integrity. However, both options require a fundamental revision of the CDM and are thus available only on a long-term perspective.

Limiting CDM projects to only one crediting period could have a more direct effect on CER supply but would require an equally cumbersome implementation process. Furthermore, it would probably provoke strong resistance from project developers and hamper future investments in the CDM.

An exception could be the implementation of a discount factor on the demand side. The EU for example could unilaterally commit itself to

surrender more than one CER per tonne CO₂e emitted or introduce a discount factor for the use of CERs in the EU ETS. This measure could boost demand and address the supply-demand imbalance. However, such a measure would be just a different approach on how to implement more ambitious targets. It is therefore subject to the same argumentation as the one on increased targets discussed above.

Some of the options are not considered to be helpful in the current situation. A temporary halt of issuance of credits would likely take away any remaining faith in the mechanism and result in a complete collapse of the CER market if implemented without any other measures that provide a long-term perspective for the carbon market. The introduction of a CER reserve bank would be difficult to implement in the international context and will likely not have a lasting effect on carbon prices as long as the mandate of such institution is limited to strategically buying and selling CERs instead of directly controlling credit supply. Such an institution would not be able to address the structural imbalance of supply and demand.

It also bears noting that some argue that the CDM in its current form will always have an oversupply problem because the potential for generating credits will always be much greater than what industrialised countries can absorb. However, attempts to restrict the CDM to certain project types have failed in the past and it therefore seems unlikely that any such agreement will be possible now.

Another route to achieving the same effect would be if current seller countries became buyers of CERs, through adopting binding commitments and/or establishing domestic emission trading systems. However, this rather seems a prospect for the next decade at the earliest, given that China has just pushed back the development of a national ETS and discussions in most other developing countries are even less advanced.

Summary of options to stabilize carbon markets	
Demand-side options	
1) More ambitious targets	<ul style="list-style-type: none"> + strong signal to carbon markets + additional long-term demand - unlikely to be agreed upon
2) Extended use for compliance	<ul style="list-style-type: none"> - low potential due to lack of ambition
3) Extended use for non-compliance goals	<ul style="list-style-type: none"> + easy to implement voluntarily + target-oriented support of projects is possible - sufficient scale unlikely in the face of budgetary and economic crisis
4) CER use in emerging ETSs outside the Kyoto Protocol	<ul style="list-style-type: none"> + potentially large sources of additional long-term demand + ETS covered sectors form no longer CDM potential - little interest by implementing countries to make use of CERs - only mid- to long-term perspective
5) CER use in voluntary markets	<ul style="list-style-type: none"> + potential for increased use - small volume of voluntary markets is not sufficient to address supply-demand imbalance
6) Introduction of a Fund or use of the GCF	<ul style="list-style-type: none"> + GCF is potentially large enough to create sufficient demand + short-term availability + target-oriented support for specific project types, regions or modalities if strong eligibility criteria are applied - NAMA principles not reflected when CERs are purchased from secondary markets - further market fragmentation if only selected (primary market) CERs are eligible
7) Introduction of a CER reserve bank	<ul style="list-style-type: none"> - no possibility to alter absolute supply-demand balance - little chance to abate price volatility due to speculative nature of CER prices - unclear up-front financing of the bank
8) Introduction of a floor price	<ul style="list-style-type: none"> - unilateral floor prices distort market prices - do not increase but decrease demand for offsets - global floor price would require fundamental makeover of the CDM
Supply-side options	
9) Restriction of eligibility of projects	<ul style="list-style-type: none"> + reduced supply + easy implementation - no clear signal on the future of the mechanism - limiting the mechanisms potential - unlikely to be agreed on
10) Rigorous assessment of projects	<ul style="list-style-type: none"> + improved environmental integrity - no short-term effect since only future projects are affected
11) Discounting of Credits	<ul style="list-style-type: none"> + significantly reduced supply or increased demand + improved environmental integrity + implementation possible unilaterally on the demand side - implementation on the supply side requires fundamental revision of the CDM modalities and procedures - requires additional ambition that is unlikely in the face of the fiscal crisis
12) Application of ambitious baselines	<ul style="list-style-type: none"> + reduced supply + improved environmental integrity - implementation would require overhaul of CDM and its methodologies - would apply for future CER supply only - only long-term effects
13) Limiting projects to one crediting period	<ul style="list-style-type: none"> + strong impact on CER supply - difficult to implement politically - strong resistance from project developers - no signal for long-term perspective
14) Temporary halt of issuance or credits	<ul style="list-style-type: none"> - could destroy market participants faith in the future of the market

References

- Bellassen, V., Stephan, N. and Leguet, B. 2012. *Will There Still Be a Market Price for CERs and ERUs in Two Years Time?* 13. Climate Brief. CDC climat.
- CDM Policy Dialogue. 2012. *Climate Change, Carbon Markets and the CDM: A Call to Action*. Report of the High-Level Panel on the CDM Policy Dialogue. CDM Policy Dialogue.
- Elsworth, R., Worthington, B. and Morris, D. 2012. *Help or Hindrance? – Offsetting in the EU-ETS*. Sandbag. London.
- EU. 2009. *Amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community*. Directive 2009/29/EC of the European Parliament and of the Council. 23rd April 2009. Brussels.
- European Commission. 2011. *Emissions trading: Commission welcomes vote to ban certain industrial gas credits*. Press Release IP/11/56: 21st January 2011. Brussels.
- European Commission. 2012. *Progress towards achieving the Kyoto Objectives*. Report from the Commission to the European Parliament and the Council. Brussels.
- European Environment Agency (EEA). 2012. *Greenhouse gas emission trends and projections in Europe 2012 – Tracking progress towards Kyoto and 2020 targets*. EEA Report No. 6/2012. Copenhagen.
- Gallo, F. 2012. *Exploring the complementarities between the Green Climate Fund and the CDM: Developing the GCF's Project Certification and Credit Issuance Process*. Paper for the CDM Policy Dialogue.
- IETA – International Emissions Trading Association. 2012. *Greenhouse Gas Market 2012 – New Markets, New Mechanisms, New Opportunities*. Geneva.
- Korthuis, A. 2013. *Offsetting mechanisms from 2013 onwards: opportunities for project developers?*. Presentation at Austrian Climate Change Workshop. 28th January 2013. Vienna.
http://www.publicconsulting.at/uploads/4_adriaan_korthuis_offsetting_mechanisms_from_2013_onwards.pdf
- Michaelowa, A. 2012. *Scenarios for the global carbon market*. Paper for the CDM Policy Dialogue.
- Parnell, J. 2013. *China postpones launch of national carbon market to post-2015*. RTCC – Climate Change News. <http://www.rtcc.org/china-postpones-launch-of-national-carbon-market-to-post-2015/>. published 21st March 2013.
- Peters-Stanley, M. and Hamilton, K. 2012. *Developing Dimension: State of the Voluntary Carbon Markets 2012*. Washington DC: Ecosystem Marketplace.
- Point Carbon. 2012a. *China lowers carbon floor price as CER prices crash*. 18th January 2012.
<http://www.pointcarbon.com/news/1.1722346>.
- Point Carbon. 2012b. *No demand for international offsets in California until 2015: expert*.
<http://www.pointcarbon.com/news/1.1592240>. last accessed 16th October 2012.
- Point Carbon. 2013. *U.N. commissions study into launching CDM rescue fund*.
<http://www.pointcarbon.com/news/1.2273150>. last accessed 15th April 2013.
- Sandbag. 2012. *Sandbag Briefing - The UK Carbon Floor Price*. London.

Sandbag. 2013. *New emissions data builds pressure to rescue Europe's failing emissions trading scheme*. Press release: 2nd April 2013. London.

Schneider, L. 2008. *A Clean Development Mechanism (CDM) with atmospheric benefits for a post-2012 climate Regime*. Öko-Institut. Berlin

Seppänen, S., Ahonen, H.-M., Ollikainen, J., Viljaranta, S., Hoogzaad, J., Huber, S., Conway, D., Chagas, T., Fernandez, M. 2013. *Demand in a Fragmented Global Carbon Market: Outlook and Policy Options*. Nordic Council of Ministers. Norden. Copenhagen.

Vivid Economics. 2012. *The Future Context of the CDM*. Report prepared for the High-Level Panel on the CDM Policy Dialogue.

World Bank – Carbon Finance Unit. 2012. *Leveraging the Carbon Market for Low-Income Countries: The Carbon Initiative for Development*. Program Note. Washington.

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